

REMARKS

Applicant's counsel thanks the Examiner for a very careful and thorough examination of the present application. Applicant also appreciates the indication of allowable subject matter in claims 6, 9, 16-27, 29-37 and 41-44 as filed.

Claims 2, 16, 23, 30 and 37 all have been rewritten in independent form without narrowing the scope of any claim. It is noted the empirical formula limitations originally presented in claim 1 have not been reproduced in the rewritten claims 16, 23, 30 and 37 because the empirical formulae of species in each of these claims are implicit from the structural formulae already presented therein. The excluded species originally listed in claim 1 also have not been reproduced in rewritten claims 16, 23, 30 and 37 because such species are already excluded by the structural formulae presented in each of these claims.

Claims 28, 40 and 47 have been amended to correct typographical errors in a manner not affecting the scope of any claim. The specification also has been amended to correct typographical errors. Claim 1 has been canceled without prejudice or disclaimer. New claims 59 and 60 have been added. Basis for these new claims is found in the specification at, e.g., paragraph [0062]. No new matter has been entered in respect of any amendment to the claims or the specification.

New color photographs have been submitted in place Figs. 6, 10 and 16 originally filed with the application. It is noted these figures originally were supplied as color photographs with the application as filed, thus the present submission of color photographs does not constitute new matter. Applicants are submitting herewith 1) new copies of Figs. 6, 10 and 16 in triplicate as color photographs in compliance with 37 CFR § 1.84(b)(2), 2) black and white photocopies of the color photographs, and 3) an appropriate petition under 37 CFR § 1.84(b)(2), together with the necessary petition fee, to satisfy the requirements of 37 CFR § 1.84. As required by 37 CFR § 1.84, the specification also has been amended to include the form paragraph required at the beginning of the "Brief Description of the Drawings" section, indicating that at least one color photograph was filed in the case. The Examiner is requested to review and approve the enclosed color photographs for Figs. 6, 10 and 16, which are the same as originally filed, and which are being resubmitted herewith merely to comply with the requirements of Rule 1.84.

Amendments to the Drawings:

Submitted herewith are 12 total pages of clean copies of formal drawings, including:

Three copies each of Figs. 6, 10 and 16 executed in color, and one black and white copy of each of these figures, to replace existing Figs. 6, 10 and 16.

ATTACHMENT: 12 pages of formal drawings (3 copies of Figs. 6, 10 and 16 executed in color, 1 black and white copy of Figs. 6, 10 and 16.

Claims 16, 23, 30 and 37, all of which were indicated by the Examiner as being allowable, have been rewritten in independent form. Accordingly, each of these claims now is in condition for allowance.

Claim 1 has been rejected under 35 USC § 112, second paragraph because " C_5H_6 " was inadvertently specified in that claim when " C_6H_5 " had, in fact, been intended. Claim 1 has been canceled without prejudice thus obviating the Examiner's rejection. However, Applicant greatly appreciates the Examiner having pointed out this typographical error, and the specification and claim 40 have been amended herein to correct other instances of this typographical error.

Claims 47-51 have been rejected under 35 USC § 112, second paragraph because the definitions of M' and M" as originally presented in claim 47 inadvertently were transposed. Applicant appreciates the Examiner pointing out this error, and claim 47 has been amended to overcome the rejection.

Claim 28 also was rejected under 35 USC § 112, second paragraph because that claim specified "CuGaS" when " $CuGaS_2$ " was intended. Claim 28 now has been amended to overcome this rejection.

Several claims have been rejected under 35 USC § 102(b) as being anticipated by Banger et al., Applied Organometallic Chemistry, Vol. 16, No. 11, pp. 617-627 (hereinafter the "Banger article"). The Examiner has indicated this article was published online on October 8, 2002. The present application claims the benefit under 35 USC § 119(e) of U.S. provisional patent application serial No. 60/443,117 which was filed on January 28, 2003. This benefit claim has been perfected as described in 37 CFR § 1.78(a)(4)-(5). Consequently, the instant application has an effective U.S. filing date of January 28, 2003 for all the material disclosed in that provisional application.

The Banger article was fully incorporated into and made a part of that provisional application, serial No. 60/443,117 at pp. 19-31 thereof. Therefore, to the extent the Banger article discloses any claim of the present application, such disclosure was made a part of the above-noted provisional application (whose benefit is now claimed) which was filed less than one year after that article was published. Accordingly, the Banger article is not Section 102(b) prior art against the instant application, and it is respectfully submitted the claim rejections over the Banger article should be withdrawn.

Claims 1 and 16 have been rejected under 35 USC § 102(b) as being anticipated by Chhipa et al. Claim 1 has been canceled without prejudice. With respect to claim 16, it is

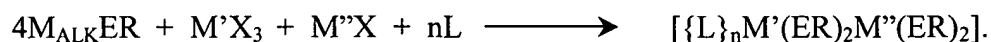
believed this rejection was in error as the Examiner separately has indicated claim 16 to be allowable. In any event, that reference nowhere discloses the structural formulae presented in claim 16, and thus does not anticipate that claim.

Claim 2, now rewritten in independent form, has been rejected under 35 USC § 102(b) as being anticipated by Banger et al., Abstract, 222nd ACS National Meeting, Chicago, IL, Aug. 26-30, 2001 (hereinafter the "Banger abstract"). This rejection respectfully is traversed. Claim 2 describes that the single source precursors have a structure selected from one of two specific structural formulae. Conversely, the Banger abstract discloses only an empirical formula, and provides no basis or suggestion to infer any particular structural formula for the single source precursors therein described. Nor has it been suggested that any particular structural formula is necessarily inherent from the empirical formula disclosed in the Banger abstract. Hence, because the Banger abstract does not disclose any structural formula for the single source precursors, it cannot anticipate claim 2 herein, and the rejection of claim 2 has been overcome.

Claim 38 also has been rejected under 35 USC § 102(b) as being anticipated by the Banger abstract. Claim 38 recites, *inter alia*, "said single source precursor being a liquid at room temperature." The Banger abstract nowhere discloses or suggest a "single source precursor being a liquid at room temperature." Thus, the rejection of claim 38 has been overcome.

Claim 40 also has been rejected under 35 USC § 102(b) as being anticipated by the Banger abstract. Claim 40 recites a method including the step of "depositing the single source precursor on a substrate using a spray CVD technique." The Banger abstract nowhere discloses or suggests such a method step. Conversely, the Banger abstract discloses a metallorganic chemical vapor deposition technique (MOCVD), which is substantially different from a "spray CVD" technique which is recited in claim 40. See, e.g., the specification at paragraphs [0072]-[0073] discussing the substantial differences and advantages of using spray CVD versus MOCVD. Accordingly, the rejection of claim 40 over the Banger abstract has been overcome.

Claim 47 also has been rejected under 35 USC § 102(b) as being anticipated by the Banger abstract. Claim 47 is drawn to a method for making a single source precursor wherein the following reaction is carried out:



The Banger abstract nowhere discloses this reaction. Therefore, the rejection of claim 47 has been overcome.

Claim 52 also has been rejected under 35 USC § 102(b) as being anticipated by the Banger abstract. Claim 52 recites a method of making a quantum dot comprising the steps of:

- a) providing a single source precursor for a ternary chalcopyrite material; and
- b) pyrolyzing said single source precursor to yield a quantum dot made of ternary chalcopyrite material having dimensions less than 100 nanometers.

The Banger abstract does not disclose pyrolyzing a single source precursor to yield a quantum dot having the recited dimensions. Accordingly, the rejection of claim 52 has been overcome.

In summary, claims 16, 23, 30 and 37 all have been rewritten in independent form, and therefore are in condition for allowance as previously indicated by the Examiner. Claim 2 also has been rewritten in independent form, and the rejections thereof have been overcome for the reasons given above. In addition, the rejections of independent claims 38, 40, 47 and 52 also have been overcome, and these claims are allowable for the reasons given above. Claims 6, 9, 17-24, 25-27, 29, 31-36 all have been indicated by the Examiner to be allowable.

All remaining claims are dependent claims, and therefore are allowable at least by virtue of their dependence on an allowable base claim.

Accordingly, all claims now being in condition for allowance, early notice to that effect is respectfully requested.

If there are any additional fees required by this communication, please charge such fees to our Deposit Account No. 16-0820, Order No. 35089US1.

Respectfully submitted,

PEARNE & GORDON LLP

By 
Steven J. Solomon, Reg. No. 48719

1801 East 9th Street
Suite 1200
Cleveland, Ohio 44114-3108
(216) 579-1700

Date: April 13, 2005